Base by U.S. Geological Survey, 1956.

Geology mapped at 1:62,500 by Allan P. Bennison and Charles Milton, 1950; revised at 1:24,000 by Richard E. Eggleton, 1958 and 1959.

SCALE 1:24000

1 MILE 1/2 0

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 KILOMETRE 5 0

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

APPROXIMATE MEAN DECLINATION, 1956

TRUE NORTH
MAGNETIC NORTH

INDEX TO ADJOINING 7½-MINUTE QUADRANGLES

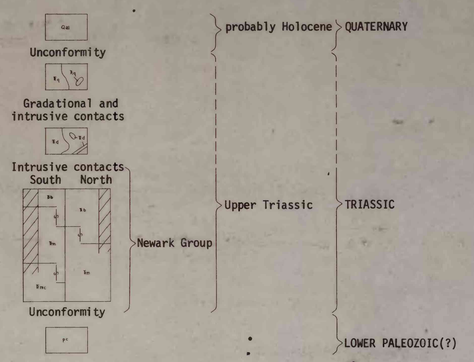
PRELIMINARY GEOLOGIC MAP OF THE HERNDON QUADRANGLE, VIRGINIA

By

Richard E. Eggleton

1975

CORRELATION OF MAP UNITS



DESCRIPTION OF MAP UNITS

Qal — ALLUVIUM (PROBABLY HOLOCENE)--Mainly mixtures of silt and clay, but locally includes minor amounts of sand and gravel.

T_r J_d — QUARTZ DIORITE AND DIORITE (UPPER TRIASSIC?)--A mixture of locally coarse-grained, but generally medium- to fine-grained, quartz diorite and diorite; in irregular bodies; minor amounts of diabase included.

Jd — DIABASE AND BASALT (UPPER TRIASSIC?)--Dominantly fine medium-grained diabase; locally contains minor amounts of silicic(?) diabase(?) that weathers lighter in color; a basalt facies occurs in thin bodies and near contacts of larger bodies with older rocks; unit occurs as dikes ranging from thin to thick, as a trough-shaped sheet plunging north under Herndon, and as irregularly shaped bodies.

NEWARK GROUP (UPPER TRIASSIC)

Trb — BULL RUN SHALE--(The part exposed in the quadrangle consists of an approximately equal thickness of each of two members; these are not separated on map.) Upper member: Mainly dark-reddish brown mudrock like that in lower member with, at least in lowermost part, minor intraformational(?) clastic rocks like those in lower member; unit characterized throughout by subordinate varicolored clay-sized to silt-sized shale and mudstone with greenish, yellowish, brownish, and grayish colors--perhaps 1 to 5 percent in any 300 meters (about 1,000 feet) of section; locally includes rare very fine grained quartz-feldspar sandstone in upper two-thirds or less; top not exposed in quadrangle; base at bottom of varicolored mudrock layer that locally is lowest one above base of which any 300 meters (about 1,000 feet) of section includes 0.1 percent or more of varicolored mudrock. Lower member: Nearly all dark-reddish brown, clay-sized, silty clay-sized, or silt-sized shale and mudstone locally with scattered sand- and/or gravel-size intraformational(?) particles of Triassic(?) mudrock and/or lenses of intraformational(?) lithic sandstone and/or intraformational(?) conglomerate; unit generally lacks varicolored mudrock like that in upper member but contains a little in lower one-half to one-fourth; base at top of locally highest quartz-feldspar sandstone of basal sandy part of Newark Group in eastern two-thirds of quadrangle.

Trm — MANASSAS FORMATION--(Consists of two members; the lower, conglomeratic member, $T_r$mc, is mapped separately only in the southern half of the quadrangle.) Upper member: Lenses of varicolored (reddish, brownish, and yellowish colors) quartz-feldspar sandstone with enclosing dark-reddish brown mudrock and its associated minor intraformational(?) rock and minor varicolored mudrock as in Bull Run Shale; grain size and abundance of quartz-feldspar sandstone lenses generally increases downward in section; locally quartz-feldspar sandstone includes minor, relatively fine-grained intraformational(?) rocks analogous to those in mudrock consisting of coarse particles of mudrock in a matrix of sandstone rather than of mudrock; locally in lower part quartz-feldspar sandstone contains scattered gravel-size particles of quartz; base at top of locally highest extraformational 1/ conglomerate layer of basal conglomeratic part of Newark Group in eastern third of quadrangle that weathers to gravelly soil with 0.01 percent, or more, by area gravel cover in plowed fields (mapped as about 1 pebble or 100 granules, or more, per 4 square meters.)

Trmc — Conglomeratic member of Manassas Formation--(Unit not mapped separately in northern half of quadrangle because of paucity of exposures and float.) Consists of (1) dark-reddish brown mudrock possibly with a few lenses of extraformational 1/ conglomerate and (2) varicolored quartz-feldspar sandstone locally with scattered extraformational gravel-size particles and/or a few lenses of extraformational conglomerate; dark-reddish brown mudrock probably has associated minor intraformational(?) rocks and possibly minor varicolored mudrock as in Bull Run Shale; quartz-feldspar sandstone probably has associated intraformational(?) rocks as in upper member of Manassas Formation; extraformational gravel-size particles range in size from granules to small cobbles and in upper part of unit are quartz, but lower are mainly muscovite and/or quartz and locally include gneissic and granitic rocks; unit generally becomes coarser downward in section; rests with angular unconformity on Peters Creek Schist as used by Bennison and Milton (1954).

Pc — PETERS CREEK SCHIST AS USED BY BENNISON AND MILTON (1954) (LOWER PALEOZOIC?)--In quadrangle is mainly muscovite schist with minor quartz bands; some micaceous quartzite.

CONTACT-METAMORPHIC ZONE--(Adjacent to diabase and related rocks; zone mapped on the basis of the change in color of originally dark-reddish brown mudrocks to colors that are more gray; boundary placed at a saturation of 2.5; unit not mapped in northeastern part of quadrangle because originally dark-reddish brown mudrocks are rare causing a paucity of exposures and float.) Mainly grayish red, reddish gray, and gray mudrocks and some gray spotted hornfels; some other varicolored mudrocks; some brownish gray to very pale orange sandstone and conglomerate; effects of contact metamorphism on "Peters Creek Schist" unit not established.

CONTACT--Believed to be within about 30 meters (100 feet) of plotted position where line is solid, less accurately located where shown by long dashes, indicates geologic relations inferred from meager evidence where shown by short dashes, covered where line is dotted.

STEP CONTACT--Marks place where contact steps perpendicular to stratification from the inferred pinch out of one bed to the next lower or higher bed of the same lithology.

FAULT--Showing relative movement: U, up; D, down. Believed to be within about 30 meters (100 feet) of plotted position where line is solid; less accurately located where shown by dashes, shorter dashes indicating least accuracy; covered where line is dotted; of questionable existence where line is queried.

STRIKE AND DIP OF STRATIFICATION 2/

HORIZONTAL STRATIFICATION 2/

APPARENT DIP OF STRATIFICATION 2/

BEARING AND PLUNGE OF SLICKENSIDES 2/

MINOR FOLD AXES 2/--Showing bearing and plunge of axis, minimum observed dihedral angle between limbs, and dip of axial plane.

ANTICLINE

SYNCLINE

MIXED TYPES

STRIKE AND DIP OF FOLIATION 2/--Produced mainly by parallelism of mica flakes and minute, flattened quartz pods.

HORIZONTAL FOLIATION 2/

STRIKE AND DIP OF CLEAVAGE 2/

BEARING AND PLUNGE OF LINEATION 2/--Minute wrinkles.

HORIZONTAL LINEATION 2/

STRIKE AND DIP OF AXIAL PLANE OF CHEVRON FOLDS 2/

REFERENCES

Bennison, A. P., and Milton, Charles, 1954, Preliminary geologic map of the Fairfax, Virginia, and part of the Seneca, Virginia--Maryland quadrangles: U.S. Geol. Survey open-file report.

Pettijohn, F. J., 1957, Sedimentary Rocks, 2nd ed.: New York, Harper and Row, 718 p.

1/ Extraformational is used in the sense of Pettijohn (1957, p. 255) to indicate that the coarse fraction is composed of fragments derived from rocks outside the basin of deposition (the deposition of Triassic age in this case) as opposed to the intraformational rocks in which the coarse fraction consists of fragments of sediments previously deposited elsewhere in the basin of deposition.

2/ The symbol ·· indicates point of observation.

Supplementary text pamphlet accompanies map.